



Loop-IP6810 Self-Healing Ring NTU

Features

- Full frontal access (ETSI) unit complies with IP30 standard
- Desktop, wall, or DIN Rail mounting
- Compact intelligent FX packet optical ring with Layer 2 switching capabilities
- WAN port with OA&M functionality
 - Dual SFP optical housing interfaces
 - Dual RJ45
- Tributary ports
 - 3 ports 10/100 BaseT Ethernet (with PoE option available in DC 48 only)
 - 2 ports RS232/485 interfaces, user selectable via 2-port DIP switch
 - 2 dry contact for input and 2 dry contact for output; support point-to-point and point-to-multi-point
- Power modules
 - On-board fixed single AC supply
 - On-board fixed single/dual DC modules with dual feed
- Auto-discovery topology, auto-diagnostic and remote-configure for easy plug-and-install (up to 64 units)
- Supports SNMP
- Ethernet Functionality
 - Loop Ethernet Automatic Protection Switching (LEAPS)
 - Fault recovery time: less than 50 ms
 - Point-to point: fault recovery time less than 8 ms
 - Up to 15 units: fault recovery time less than 25 ms
 - IEEE 802.1w RSTP, 802.1s MSTP*
 - IEEE 802.3x Flow Control, 802.1q Port Base VLAN / Port Isolation
- Up to 1024 MAC addresses
- Built-in BERT
- High speed, asynchronous RS232/RS485 for point-to-point, point-to-multi-point, or omnibus-like applications
- Master/Slave units setting by using DIP switch
- Auto-negotiating or forced speed for speed and full/half duplex for Ethernet ports
- Full/half duplex for tributary Ethernet ports
- Alarm relay and ACO (Alarm Cut Off) button
- Remote firmware download via TFTP & Z modem
- Remote configuration upload & download via TFTP
- Management port and interface
 - In-band management
 - RS232 console via DB9 connector
 - SNMP v1, v3
 - SSH v2
 - Telnet
 - LoopView GUI EMS
- IEEE 1613, IEC61850-3 (for DC -48 Vdc only)
- RoHS compliant

* Future Option

5 Years
Warranty



Description

The Loop-IP6810 is a self-healing ring network termination unit (NTU) with a built-in L2 switch. It can be desktop, wall or DIN rail mounted. LEAPS, RSTP, or MSTP* Ethernet Ring protection or point-to-point protection is made possible in 100 Base-FX networks with the IP6810.

All end equipment can be either in packet format via Ethernet ports or serial data via RS232/485 interfaces which will be converted into packet format within the IP6810. The IP6810 has two WAN optical and electrical interfaces, two RS232/485 DTE interfaces, three Ethernet LAN interfaces, two sets of dry contact IN/OUT interfaces, and one alarm relay connector. The IP6810 comes in an industrial hardening mode to support temperatures from -20°C to 70°C (-4°F to 158°F).

The IP6810 supports auto-discovery to locate all units on the ring, and also supports remote configuration for ease of installation.

Single AC, single DC or dual DC is supported based on field requirements. Power over Ethernet (PoE) option is also available.

The IP6810 facilitates automation systems, SCADA systems, surveillance systems, traffic control systems, transportation systems and IP networking with robust protection in ring, point-to-point, or omnibus-like topology. Easy installation and configuration make maintenance and further expansion more efficient and cost-effective.

Ordering Information

To specify options, choose from the list below.

Note: RoHS compliant units are identified by the letter **G** immediately at the end of the ordering code.

Main Unit

Model	Description	Notes
Loop-IP6810-CS-SFPC -ipp1-ipp2-add1- G	Self-healing NTU Device with dual SFP (mini-GBIC) optical housing daughter card for WAN port, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact. Temperature range 0°C to 50°C	SFP optical modules are NOT included Where ipp1, ipp2, add1, and SFP modules are defined in the tables below. Add1 only available on DC48 option. No IEEE 1613 and IEC 61850-3 certifications for RJ45 daughter card for WAN port.
Loop-IP6810-CS-ETH -ipp1-ipp2-add1- G	Self-healing NTU Device with dual RJ45 daughter card for WAN port, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact. Temperature range 0°C to 50°C.	
Loop-IP6810-IS-SFPC -ipp1-ipp2-add1- G	Self-healing NTU Device with dual SFP (mini-GBIC) optical housing daughter card for WAN port, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact. Temperature hardening range -20°C to 70°C	
Loop-IP6810-IS-ETH -ipp1-ipp2-add1- G	Self-healing NTU Device with dual RJ45 daughter card for WAN port, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact. Temperature hardening range -20°C to 70°C	
Loop-IP6810-ISETH-SFPC-ipp1-ipp2-add1- G	Self-healing NTU Device with dual SFP (mini-GBIC) optical housing daughter card for WAN port, and 3 Ethernet LAN ports only. Temperature hardening range -20°C to 70°C.	
Loop-IP6810-ISETH-ETH-ipp1-ipp2-add1- G	Self-healing NTU Device with dual RJ45 daughter card for WAN port, and 3 Ethernet LAN ports only. Temperature hardening range -20°C to 70°C.	

■ Where **ipp1** is used to select the 1st industrial power supply (temperature hardening range -20°C to 70°C):

ipp1 =	Description	Note
IAC	Single AC power supply (100 to 240 Vac, 50/60 Hz)	Please choose appropriate power cord for AC version. Power redundancy not supported.
IDC24	Single DC power supply (-24 Vdc: -18 to -36 Vdc)	For redundancy purposes, ordering a second power module will provide dual DC power.
IDC48	Single DC power supply (-48 Vdc: -36 to -72 Vdc)	




■ Where **ipp2** is used to select the 2nd DC power supply for **pp1** (temperature hardening range -20°C to 70°C) :

ipp2 =	Description	Note
IDC24	Single DC power supply (-24 Vdc: -18 to -36 Vdc)	Your selection for pp2 must be the same as pp1
IDC48	Single DC power supply (-48 Vdc: -36 to -72 Vdc)	

■ Where **add1** is used to select enclosure types:

Add1 =	Description	Note
PoE	Power over Ethernet	Only available with DC48 power

Accessories

Power Cord		
Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	AC power cord for UK	

Loop-ACC-PC-AUS	AC power cord for Australia	↑
Loop-ACC-PC-CH	AC power cord for China	↑
Tray		
81. TRAY19.0000G	19" Tray (One tray for two base units)	
User's Manual		
Loop-IP6810-S-UM	User's Manual (optional paper copy). A electronic version of the manual on CD is included with every order.	
SFP Optical Modules		
Please place your order using the 5-digit alphanumeric codes listed in the separate SFP Optical Module Brochure.		

Examples 1:

Main unit: Loop-IP6810-IS-SFPC-IDC24-IDC24-G

Description: Industrial standard unit with 2 SFP optical housing daughter card, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact, and two -24 Vdc industrial power modules.

Examples 2:

Main unit: Loop-IP6810-CS-SFPC-IAC-G

Description: Commercial standard unit with 2 SFP optical housing daughter card, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact, and one 100 to 240 Vac industrial power module.

Examples 3:

Main unit: Loop-IP6810-IS-SFPC-IDC48-IDC48-PoE-G

Description: Industrial standard unit with 2 SFP optical housing daughter card, 3 Ethernet LAN ports, 2 RS232/485 ports and one DB9 port with 2-channel Dry Contact, and two -48 Vdc industrial power modules, and PoE option.

Examples 4:

Main unit: Loop-IP6810-ISETH-SFPC-IDC24 -G

Description: Industrial standard unit with 2 SFP optical housing daughter card, 3 Ethernet LAN ports, and one -24 Vdc industrial power module.

Examples 5:

Main unit: Loop-IP6810-IS-ETH-IDC24 -G

Description: Industrial standard unit with 2 RJ45 daughter cards for WAN port, 3 Ethernet LAN ports, and one -24 Vdc industrial power module.

Loop-IP6810 RTU Ethernet Ring Product Specification

WAN Network Side Interface

Number of Ports	Up to 2
Functions	100 Base-Fx 10/100BaseT (only available for -24 Vdc): Auto-negotiation, Auto MDI/MDIX, and Full or half duplex
Connector	SFP housing RJ45 (for -24 Vdc)

SFP Optical Module Characteristics (Please refer to SFP optical module brochure for detail)

Tributary Customer Side Interfaces

RS232 Interface

Number of Ports	Up to 2	Note: Interface changed by DIP switch from RS485
Electrical	RS232, DCE	
Baud Rate	200, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps, asynchronous	
Function	Up to 16 remote IP address each port Flow control: RTS/CTS, XON/XOFF RTS forwarding	
Connector	DB9, female Add stop bit: 1, 1.5, 2 bit Add data bit: 5, 6, 7, and 8 bit	

RS485 Interface

Number of Ports	Up to 2	Note: Interface changed by DIP switch from RS232
Electrical	RS485, DCE	
Baud Rate	200, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps, asynchronous	
Function		
Connector	DB9, female	
	Add stop bit: 1, 1.5, 2 bit	
	Add data bit: 5, 6, 7, and 8 bit	

Ethernet Interface

Number of ports	3
Ethernet functions	10/100BaseT, IEEE 802.3, 802.3u LEAPS (Loop Ethernet Automatic Protection Switching) 802.1q Port Base VLAN, Port Isolation 802.3x Flow Control Auto-negotiation (10/100M) Auto MDI/MDIX Full or half duplex Up to 1024 MAC addresses Rate limiting for LAN port
QoS Functions	Four priority queue
Connector	RJ45

Dry Contact I/O Interface

Connector	DB9, Female
2-channel Inputs	
Internal Resistance	1 k ohm
Activation Current	3.3 mA
Deactivation Current	1.5 mA
Allowable Current	4 mA
2-channel Outputs	
Initial Insulation Resistance	Minimum 100M ohm (at 500 Vdc)
Allowable Short-circuit Rating Current	5 A (at maximum)

Protocols

IEEE 802.1w RSTP, 802.1s MSTP*	
SNMP	
LEAPS	Each unit with 3.69 ms delay and 0.05 ms/km transmission delay (at maximum) Fault recovery time: normally less than 50 ms

Alarm Control

Alarm relay	NO, COM, NC
Connector	Terminal block
Alarm cut off	ACO button

Management

LEDs	Multi-color LEDs
Console port	Protocol: Menu driven VT-100 Electrical: RS232, DCE Connector: DB9S, female
Telnet	Supported
SSH	v2
SNMP	v1, v3
LoopView GUI EMS	Supported

Performance Monitor

Alarm Queue	Contains up to 500 alarm records which record the latest alarm type, alarm severity, and date & time
OA&M	Link Status Update, Link Status Monitoring
BERT	PRBS 2 ¹⁵ -1

Power

Power	AC: Full range supports 100 to 240 Vac, 50/ 60 Hz DC24: -18 to -36 Vdc DC48: -36 to -72 Vdc
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PoE (Power over Ethernet)	Both DC24 and DC48 are on-board fixed single/dual DC modules with dual feed
Power Consumption	DC input range: -44 to -57 Vdc (PSE for indoor only)
Protection	10 Watts maximum normally Less than 6 Watts (for devices with 3 Ethernet ports only)
	Over current protection fuse

Physical and Environmental

Dimensions	215 x 41.5 x 156 mm (WxHxD), 1U height
Temperature range	-20 to 70 °C
Humidity	0 to 95% RH (non-condensing)
Mounting	Desk-top, wall mount , DIN rail
Enclosure Type	IP30 enclosure

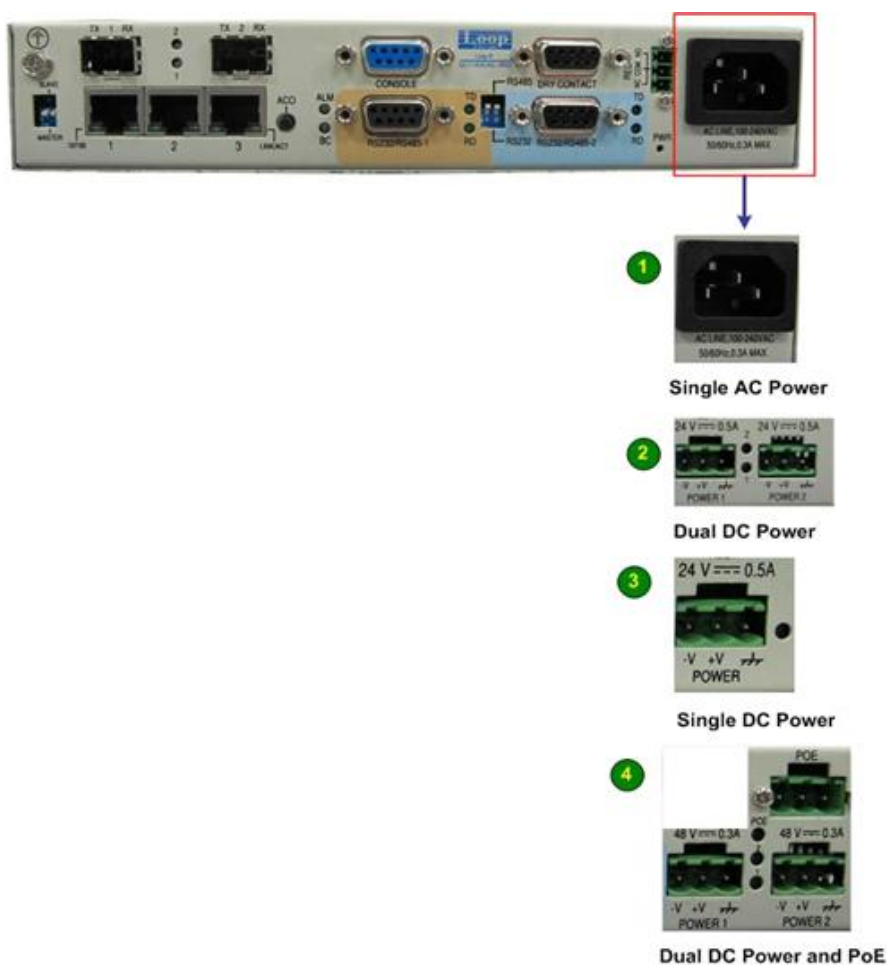
Standard Compliance

IEEE	802.3, 802.3u, 802.3x, 802.1d, 802.1w, 802.1p, 802.1q, 802.1s*
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Certification

EMI/EMC	FCC15 subpart B class A, EN55022 class A, EN55024, EN300 386, EN300 386 v1.4.1, EN55022 :2006+A1 :2007, EN55024 :1998+A1 :2001+A2 :2003, EN61000-3-2 :2006, EN61000-3-3 :2008
Safety	IEC60950-1, EN60950-1, IEC61850-3:2002, IEEE1613:2003, IEC60255-21 Class1 (Operating), IEC60255 Class1 &2 (Transport)

Front Panel Views



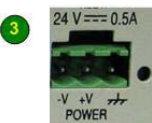
IP6810 Front Panel



Single AC Power



Dual DC Power



Single DC Power



Dual DC Power and PoE

IP6810 with Ethernet Ports Only



Single AC Power



Dual DC Power



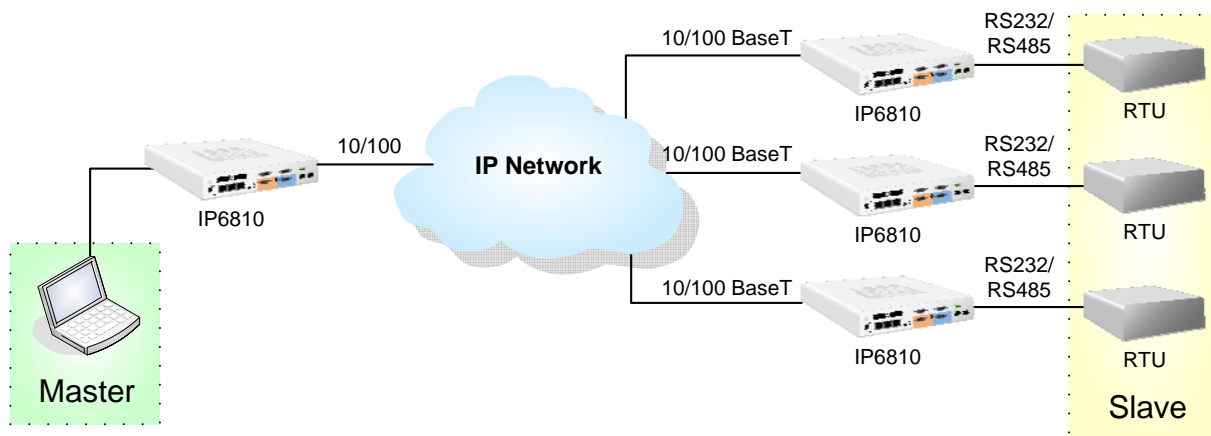
Single -24/-48 Vdc Power



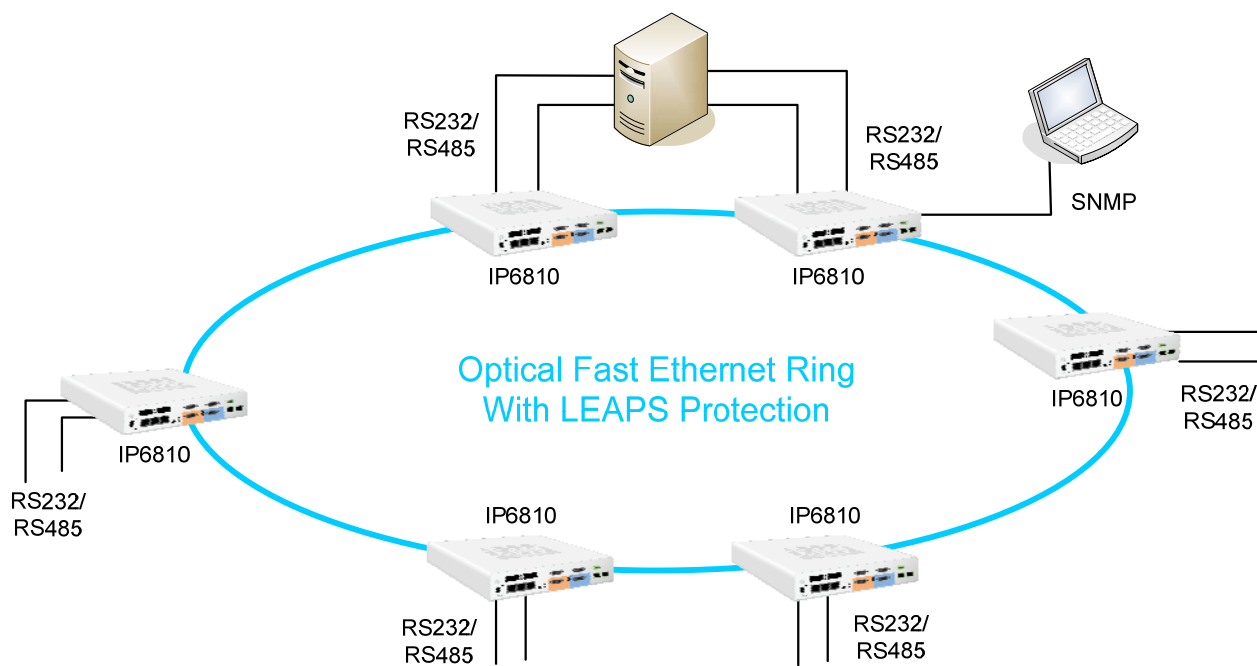
Dual DC Power and PoE

IP6810 with Dual RJ45

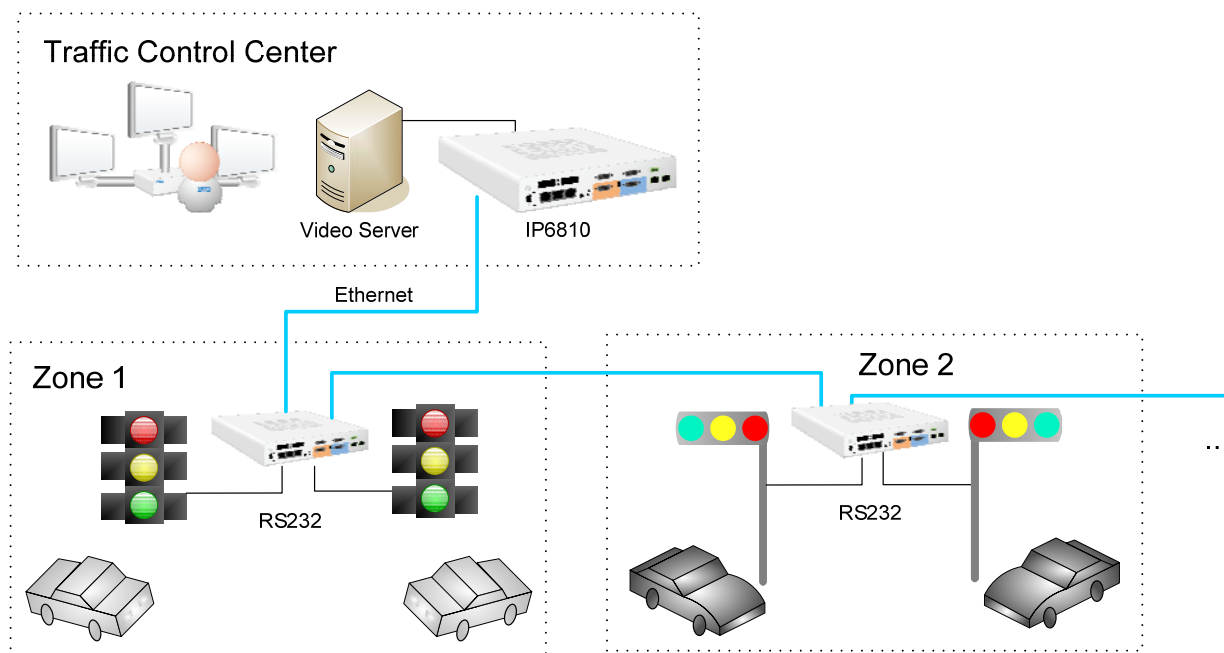
Application Illustrations



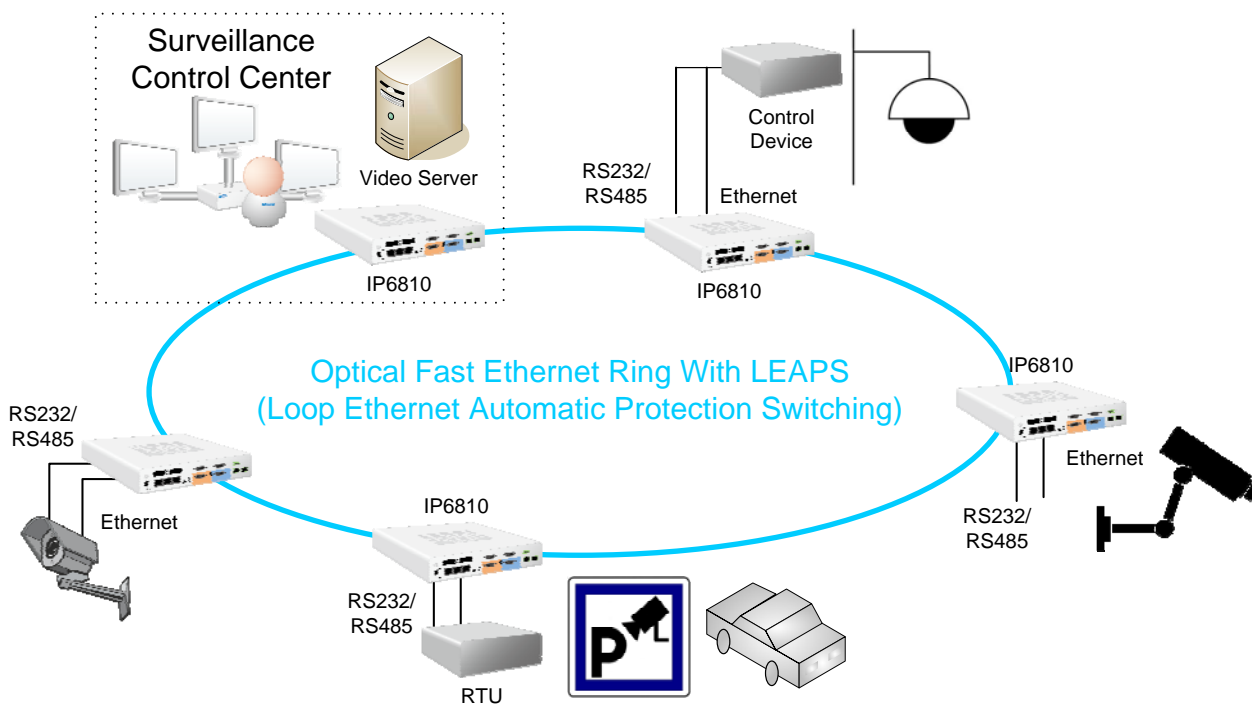
Point-to-Multi-Point Application



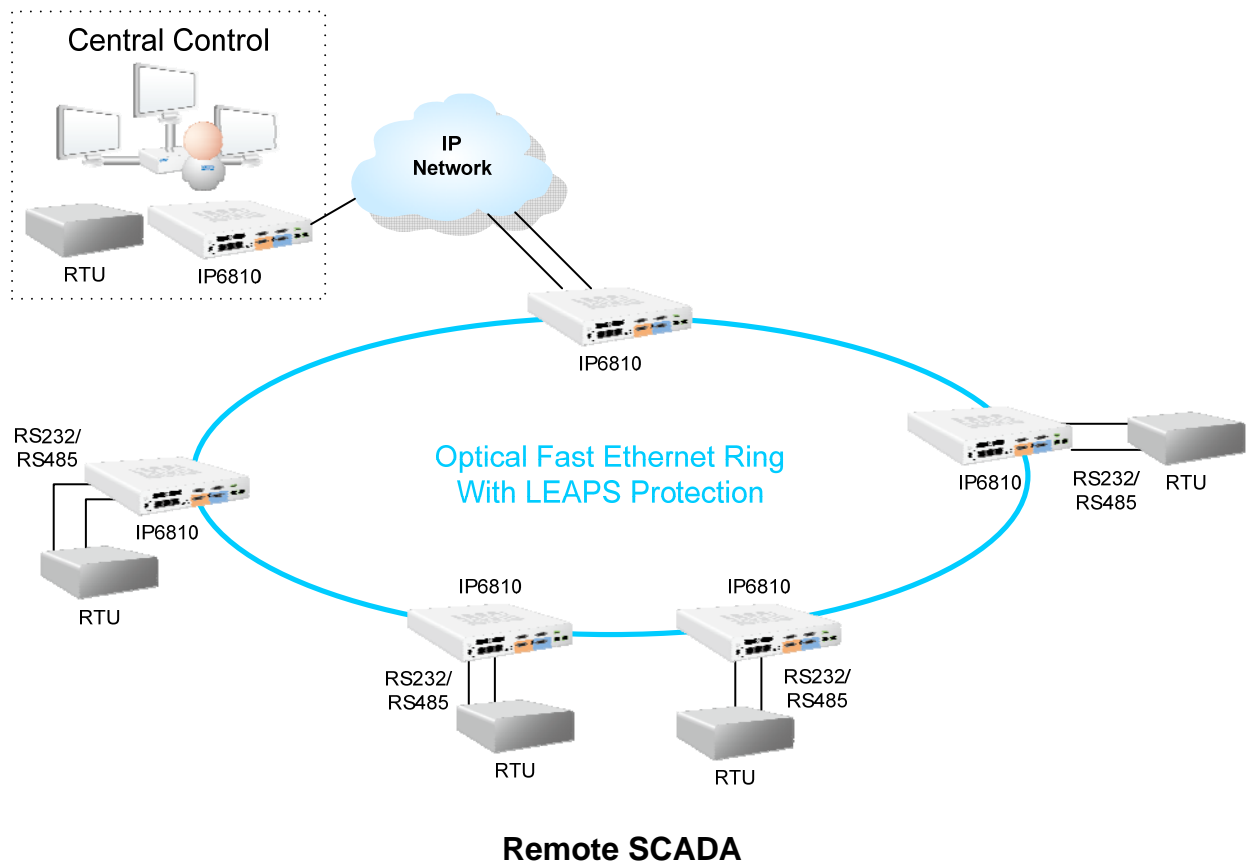
Local SCADA

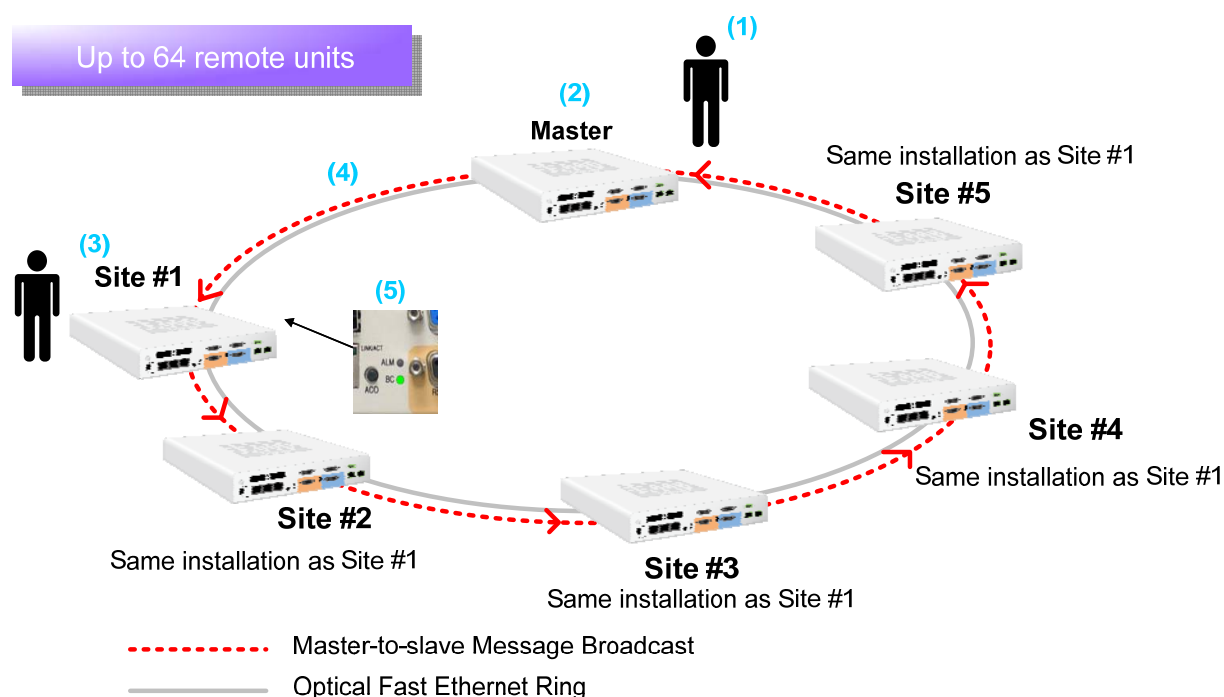


Traffic Light Management



Video Surveillance





No Configuration Necessary in Advance for Installation

Setup Procedure:

- (1) Set DIP switch to Master, connect both WAN ports and power up the unit
- (2) On VT100, set the master unit's Auto-Discovery function to ENABLE
- (3) On remote site, set the unit's DIP switch to Slave, connect both WAN ports and power up the unit
- (4) The master unit will automatically detect the slave unit and show the information on VT100 screen
- (5) BC LED will turn GREEN, which indicates the Link between Master and Site 1 is ON

Auto-Configure (Plug-and-Play)



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